

Septic tank systems are designed to serve households or businesses that are not served by public sewers. There are many different types of septic tank systems that can fit a wide range of soil and site conditions. Site-related factors such as soil texture, depth, the depth to the water table, lot restrictions, slope of the land, and type of facility dictate the type of sewage disposal system appropriate for a given site. A properly designed and functioning septic system does not pollute groundwater.

Although septic systems are individually designed for each site, most are based upon the same principles. A conventional gravity flow septic system consists of a **septic tank**, a **distribution system**, and a **drainfield**, all connected by a network of pipes. If a site evaluation reveals certain site characteristics unsuitable for a conventional gravity flow septic system, or if wastewater from a proposed facility is not suitable for conventional disposal, alternative septic system designs are available. The most common alternative systems utilize pressure distribution, a sand filter or sand-lined drainfield trenches and/or a sand mound.

PRESSURE DISTRIBUTION

A pressure distribution septic system is very similar to a conventional gravity system. The difference is the addition of a **pump** and **chamber** that pumps the wastewater leaving the septic tank (**effluent**) to the drainfield through small diameter pipes. The purpose of a pressure distribution septic system is to uniformly disperse the effluent through

the drainfield so that proper treatment can take place in the soil below.

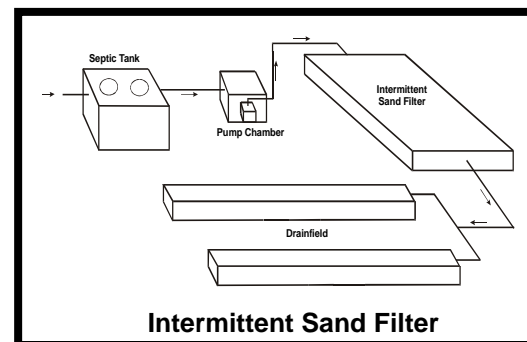
A drainfield utilizing pressure distribution is normally required for sites with excessively permeable soils and for large drainfield systems. It is also a component of other alternative sewage disposal systems.

SAND FILTERS AND SAND-LINED DRAINFIELD TRENCHES

Sometimes site conditions or wastewater strength may demand that septic tank effluent receive an even higher level of treatment than can be provided by a conventional system or pressure distribution alone. Additional wastewater treatment may require a **sand filter** or **sand-lined drainfield trenches**.

Sand Filters

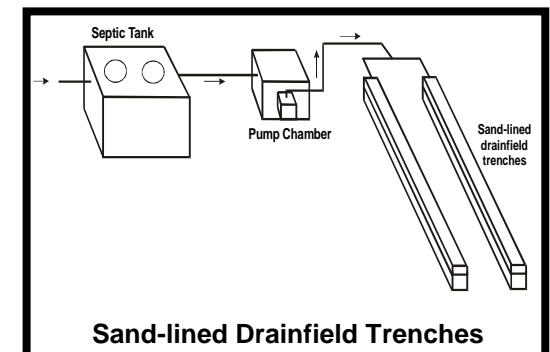
There are two general classes of sand filters: the intermittent sand filter and the recirculating sand (or gravel) filter. Each filter has attributes that make it the best choice for a particular situation. Careful evaluation of the type of wastewater and site conditions is important in choosing the proper sand filter.



A sand filter is a PVC-lined or concrete box filled with a specific grade of sand (or gravel) material. A network of small diameter pipes is then placed in a gravel-filled bed on top of the sand. The wastewater is pumped to the filter by pressure distribution. The wastewater then leaves the pipes, trickles downward through the sand and is treated as it filters through the sand. The treated wastewater may then be discharged directly to the underlying soil or to a second pump chamber for discharge to a pressure distribution or gravity flow drainfield. In the case of a recirculating sand (usually gravel) filter, the filtrate is mixed with the incoming wastewater from the septic tank and recirculated several times through the filter before being discharged to a final treatment/disposal unit.

Sand-Lined Drainfield Trenches

Sand-lined drainfield trenches may be selected for a site with excessively permeable (Type 1A) soils. The addition of 24 inches of coarse sand provides wastewater treatment not provided by excessively permeable soils. Pressure distribution is utilized to distribute the wastewater over the sand in controlled, uniform doses.



MOUND SYSTEMS

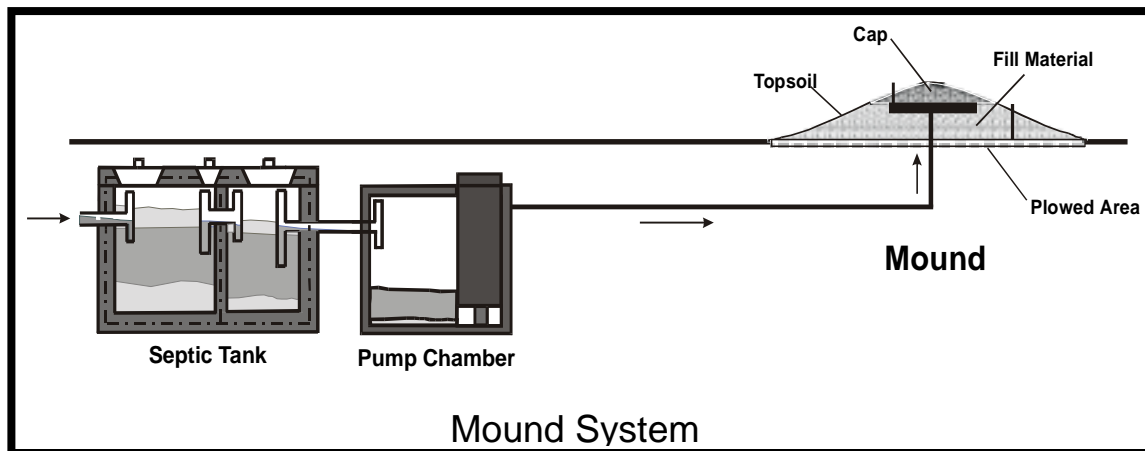
Mound systems have been developed for those sites in which a four-foot vertical separation can not be maintained between the bottom of the drainfield trench and a restrictive layer of rock, clay or groundwater. Mounds can provide excellent treatment and disposal, but require special attention in siting, design, site preparation, filter media, construction and maintenance.

A mound system consists of a drainfield located in a man-made mound located above the natural soil surface in a specific grade of sand fill material. Within the sand fill is a network of small diameter pipes. The wastewater is distributed to the mound by pressure distribution. Treatment of the wastewater occurs as it moves through the sand and into the natural soil.

There are several types of alternative septic system designs available as well as numerous proprietary devices that may be a solution for your site. Potential homeowners should contact their local health department for help in determining the most suitable septic system design to fit their needs.

For more information on septic system design, rules and regulations in Benton and Franklin Counties, contact:

Benton-Franklin Health District
Environmental Health Division
800 W. Canal Drive
Kennewick, WA 99336
(509) 582-7761 Ext.246
1-800-814-4323 Ext. 246



Alternative Septic Systems

